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| APPLICATION NO.   | FILING DATE | FIRST NAMED INVENTOR        | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
| 09/925,020  | 08/09/2001  | Fusasuke Gotoh              | Q65831              | 2484             |
| 7590 12/08/2003   |             |                             |                     |                  |
| SUGHRUE, MION, ZINN,<br>MACPEAK & SEAS, PLLC<br>2100 PENNSYLVANIA AVENUE, NW<br>WASHINGTON, DC 20037-3213 |             | EXAMINER<br>BURCH, MELODY M |                     |                  |
|   |             | ART UNIT                    | PAPER NUMBER        |                  |
|   |             | 3683                        |                     |                  |

DATE MAILED: 12/08/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application N .

09/925,020

Applicant(s)

GOTOH ET AL.

Examiner

Melody M. Burch

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 22 September 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
- a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

## Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                             | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____  |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)         | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other: _____                                    |

**DETAILED ACTION**

***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP-1122753 (using US Patent 6170625 to Tanaka as an English equivalent) in view of JP-2000-119673 (using US Patent 6329326 to Iso et al. as an English equivalent) and US Patent 5655844 to Takano.

Re: claim 1. Tanaka shows in figure 1 a rolling bearing structured such that a plurality of rolling elements 18 are respectively held between inner 16 and outer 17 rings by a retainer 19 as shown in figure 1, lubricant is sealed therein by a seal 20 as disclosed in col. 3 lines 66-67, a rotary body 1,11 provided with the outer ring and a shaft 2 provided with the inner ring can be connected together by a clutch mechanism 13 and wedged space disclosed in col. 4 lines 7-8, when the rotary body and the shaft are connected together by the clutch mechanism, the rolling bearing can be used to receive rotation load while the relative rotation between the inner and outer rings is zero as disclosed in col. 4 lines 7-10, but does not specifically disclose the limitation of the lubricant specifically being grease and the limitation wherein an initial radial clearance between the inner and outer rings is set such that a bearing effective clearance when

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the rolling bearing is incorporated between the rotary body and the shaft can provide a positive value.

Iso et al. teach in line 1 of the abstract the use of grease used as a lubricant in a rolling bearing. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the lubricant of Tanaka to have included grease, as taught by Iso et al., in order to provide a well-known means of lubricating the rolling elements of the bearing to prevent premature wear between the rolling element-race/ring contacting surface.

Takano teaches in col. 2 lines 27-36 the use of an initial radial clearance between the inner and outer rings being set such that a bearing effective clearance when the rolling bearing is incorporated between the rotary body and the shaft can be provided a positive value. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the arrangement of the inner and outer rings of Tanaka, as modified, to have included a bearing effective clearance that can provide a positive value, as taught by Takano, in order to provide a means of improving the fatigue life of the contacting faces within the bearing.

Re: claim 9. Iso et al. teach in the abstract the use of a rolling bearing having a dynamic viscosity at 40 degrees Celsius of a base oil of a grease being  $80 \text{ mm}^2/\text{s}$  or more. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the viscosity of the base oil of the grease of Tanaka, as modified, to have been  $80 \text{ mm}^2/\text{s}$  or more, as taught by Iso et al., in order to provide improved torque properties at low temperatures.

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3. Claims 2 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP-1122753 (using US Patent 6170625 to Tanaka as an English equivalent) in view of JP-2000-119673 (using US Patent 6329326 to Iso et al. as an English equivalent) and US Patent 5655844 to Takano as applied to claim 1 above, and further in view of US Patent 4371220 to Brucher.

Re: claim 2. Brucher teaches in col. 4 lines 61-63 the use of a bearing effective clearance being set at 0.020mm or more. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the bearing effective clearance of Tanaka, as modified, to have been set at 0.020mm or more, as taught by Brucher, in order to provide a means of providing adequate space for ensuing ample lubrication of the bearing device.

Re: claim 10. Iso et al. teach in the abstract the use of a rolling bearing having a dynamic viscosity at 40 degrees Celsius of a base oil of a grease being 80 mm<sup>2</sup>/s or more. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the viscosity of the base oil of the grease of Tanaka, as modified, to have been 80 mm<sup>2</sup>/s or more, as taught by Iso et al., in order to provide improved torque properties at low temperatures.

4. Claims 3 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP-1122753 (using US Patent 6170625 to Tanaka as an English equivalent) in view of JP-2000-119673 (using US Patent 6329326 to Iso et al. as an English equivalent) and US Patent 5655844 to Takano as applied to claim 1 above, and further in view of US Patent 4629337 to Teramachi.

Re: claim 3. Teramachi teaches in col. 4 lines 1-5 the use of depths of grooves formed in inner and outer rings 2,10 being respectively 17% or more of the diameter of rolling elements 4. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the depths of the grooves of the inner and outer rings of Tanaka, as modified, to have been 17% or more of the diameter of the rolling elements, as taught by Teramachi, in order to provide a means of increasing the amount of contact area between the grooves and the rolling elements to assist in maintaining the rolling elements within the confines of the grooves.

Re: claim 11. Iso et al. teach in the abstract the use of a rolling bearing having a dynamic viscosity at 40 degrees Celsius of a base oil of a grease being  $80 \text{ mm}^2/\text{s}$  or more. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the viscosity of the base oil of the grease of Tanaka, as modified, to have been  $80 \text{ mm}^2/\text{s}$  or more, as taught by Iso et al., in order to provide improved torque properties at low temperatures.

5. Claims 4 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP-1122753 (using US Patent 6170625 to Tanaka as an English equivalent) in view of JP-2000-119673 (using US Patent 6329326 to Iso et al. as an English equivalent) and US Patent 5655844 to Takano and US Patent 4371220 to Brucher as applied to claim 2 above, and further in view of Teramachi.

Re: claim 4. Teramachi teaches in col. 4 lines 1-5 the use of depths of grooves formed in inner and outer rings 2,10 being respectively 17% or more of the diameter of rolling elements 4. It would have been obvious to one of ordinary skill in the art at the

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time the invention was made to have modified the depths of the grooves of the inner and outer rings of Tanaka, as modified, to have been 17% or more of the diameter of the rolling elements, as taught by Teramachi, in order to provide a means of increasing the amount of contact area between the grooves and the rolling elements to assist in maintaining the rolling elements within the confines of the grooves.

Re: claim 12. Iso et al. teach in the abstract the use of a rolling bearing having a dynamic viscosity at 40 degrees Celsius of a base oil of a grease being 80 mm<sup>2</sup>/s or more. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the viscosity of the base oil of the grease of Tanaka, as modified, to have been 80 mm<sup>2</sup>/s or more, as taught by Iso et al., in order to provide improved torque properties at low temperatures.

6. Claims 5 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP-1122753 (using US Patent 6170625 to Tanaka as an English equivalent) in view of JP-2000-119673 (using US Patent 6329326 to Iso et al. as an English equivalent) and US Patent 5655844 to Takano as applied to claim 1 above, and further in view of US Patent 4650195 to Dreschmann et al.

Re: claim 5. Dreschmann et al. teach in figure 2 and in col. 2 lines 17-20 the use of an interference of a seal lip of a seal being 60% or more of an axial clearance. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the seal of Tanaka, as modified, to have included a seal having a seal lip being 60% or more of the axial clearance, as taught by Dreschmann et al., in



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order to provide a means of reducing the corrosion and, thus, improving the life of the bearing.

Re: claim 13. Iso et al. teach in the abstract the use of a rolling bearing having a dynamic viscosity at 40 degrees Celsius of a base oil of a grease being  $80 \text{ mm}^2/\text{s}$  or more. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the viscosity of the base oil of the grease of Tanaka, as modified, to have been  $80 \text{ mm}^2/\text{s}$  or more, as taught by Iso et al., in order to provide improved torque properties at low temperatures.

7. Claims 6 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP-1122753 (using US Patent 6170625 to Tanaka as an English equivalent) in view of JP-2000-119673 (using US Patent 6329326 to Iso et al. as an English equivalent) and US Patent 5655844 to Takano and US Patent 4371220 to Brucher as applied to claim 2 above, and further in view of Dreschmann et al.

Re: claim 6. Dreschmann et al. teach in figure 2 and in col. 2 lines 17-20 the use of an interference of a seal lip of a seal being 60% or more of an axial clearance. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the seal of Tanaka, as modified, to have included a seal having a seal lip being 60% or more of the axial clearance, as taught by Dreschmann et al., in order to provide a means of reducing the corrosion and, thus, improving the life of the bearing.

Re: claim 14. Iso et al. teach in the abstract the use of a rolling bearing having a dynamic viscosity at 40 degrees Celsius of a base oil of a grease being  $80 \text{ mm}^2/\text{s}$  or



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more. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the viscosity of the base oil of the grease of Tanaka, as modified, to have been  $80 \text{ mm}^2/\text{s}$  or more, as taught by Iso et al., in order to provide improved torque properties at low temperatures.

8. Claims 7 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP-1122753 (using US Patent 6170625 to Tanaka as an English equivalent) in view of JP-2000-119673 (using US Patent 6329326 to Iso et al. as an English equivalent) and US Patent 5655844 to Takano and Teramachi as applied to claim 3 above, and further in view of Dreschmann et al.

Re: claim 7. Dreschmann et al. teach in figure 2 and in col. 2 lines 17-20 the use of an interference of a seal lip of a seal being 60% or more of an axial clearance. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the seal of Tanaka, as modified, to have included a seal having a seal lip being 60% or more of the axial clearance, as taught by Dreschmann et al., in order to provide a means of reducing the corrosion and, thus, improving the life of the bearing.

Re: claim 15. Iso et al. teach in the abstract the use of a rolling bearing having a dynamic viscosity at 40 degrees Celsius of a base oil of a grease being  $80 \text{ mm}^2/\text{s}$  or more. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the viscosity of the base oil of the grease of Tanaka, as modified, to have been  $80 \text{ mm}^2/\text{s}$  or more, as taught by Iso et al., in order to provide improved torque properties at low temperatures.

9. Claims 8 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP-1122753 (using US Patent 6170625 to Tanaka as an English equivalent) in view of JP-2000-119673 (using US Patent 6329326 to Iso et al. as an English equivalent) and US Patent 5655844 to Takano and US Patent 4371220 to Brucher and Teramachi as applied to claim 4 above, and further in view of Dreschmann et al.

Re: claim 8. Dreschmann et al. teach in figure 2 and in col. 2 lines 17-20 the use of an interference of a seal lip of a seal being 60% or more of an axial clearance. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the seal of Tanaka, as modified, to have included a seal having a seal lip being 60% or more of the axial clearance, as taught by Dreschmann et al., in order to provide a means of reducing the corrosion and, thus, improving the life of the bearing.

Re: claim 16. Iso et al. teach in the abstract the use of a rolling bearing having a dynamic viscosity at 40 degrees Celsius of a base oil of a grease being  $80 \text{ mm}^2/\text{s}$  or more. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the viscosity of the base oil of the grease of Tanaka, as modified, to have been  $80 \text{ mm}^2/\text{s}$  or more, as taught by Iso et al., in order to provide improved torque properties at low temperatures.

### ***Response to Arguments***

10. Applicant's arguments filed 9/22/03 have been fully considered but they are not persuasive.

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Applicant argues that Takano does not disclose the structure of the present invention. In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). Examiner emphasizes that it is the combination of the Tanaka, Iso, and Takano references that teaches the claimed invention. The Tanaka reference clearly shows the structure of the present invention, the Iso reference is used solely for the teaching of the lubricant specifically being grease, and the Takano reference is used solely for the teaching of a bearing effective clearance having a positive value when the roller bearing is in an installed configuration. Applicant further argues that there is no motivation for providing Takano's clearance in the bearing apparatus of Tanaka. Examiner notes that both references are directed to bearing elements. Takano specifically teaches in col. 2 lines 34-36 that the use of a bearing effective clearance having a positive value results in improved fatigue life of the rolling faces of the rolling elements as well as those of the inner and outer races. Since the rolling bearing apparatus of Tanaka has rolling elements with rolling faces in the proximity of rolling faces of inner and outer races, Examiner maintains that it would have been obvious to one of ordinary skill in the bearing art at the time the invention was made to have incorporated a positive value effective bearing clearance, as taught by Takano, in order to improve fatigue life of the bearing apparatus of Tanaka which would enhance its reliability.

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Applicant also argues that the application of the Brucher reference is inappropriate. Examiner notes that Brucher is used solely for the teaching of a bearing effective radial clearance 6 associated with bearing 3 being a particular value to provide a means of enhancing lubrication of a bearing apparatus. Examiner also notes that it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the clearance to have been set at .020 mm or more or any appropriate value as determined by routine experimentation since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. In re Boesch, 617 F. 2d 272, 205 USPQ 215 (CCPA 1980).

### ***Conclusion***

11. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

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12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Melody M. Burch whose telephone number is 703-306-4618. The examiner can normally be reached on Monday-Friday (7:30 AM-4:00 PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jack Lavinder can be reached on 703-308-3421. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-1113.

*mmb 12/2/03*  
mmb  
December 2, 2003

*M. C. Graham 12/4/2003*  
MATTHEW C. GRAHAM  
PRIMARY EXAMINER  
GROUP 310